UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P O Box 1450
Alexandria, Virginia 22313-1450
www uspto gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/562,696	06/04/2008	Nobuyuki Tokura	034223.002	3892

441 7590 02/17/2010
SMITH, GAMBRELL & RUSSELL
1130 CONNECTICUT AVENUE, N.W., SUITE 1130
WASHINGTON, DC 20036

EXAMINER	
FIALKOWSKI, MICHAEL R	

ART UNIT	PAPER NUMBER
2466	

MAIL DATE	DELIVERY MODE
02/17/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/562,696	TOKURA ET AL.	
	Examiner	Art Unit	
	MICHAEL FIALKOWSKI	2466	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 June 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 December 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *See Continuation Sheet*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :December 30 2005; January 14 2009.

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on applications filed in Japan on July 7, 2003, July 31, 2003, and September 26, 2003. It is noted, however, that applicant has not filed certified copies of the 2003-271474, 2003-283871, and 2003-334662 application as required by 35 U.S.C. 119(b).

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: TRANSMISSION CAPACITY ALLOCATION METHOD, COMMUNICATIONS NETWORK, AND NETWORK RESOURCE MANAGEMENT DEVICE.

Claim Objections

3. Claims 1,7,14,16,21,24,25,27 are objected to because of the following informalities:

Re claim 1, Applicant recites in part on line 25 of the claim, "upon receipt of the receive nowledgement from the call requested terminal…". Examiner suggests correcting to "upon receipt of the receive **acknowledgement** from the call requested terminal…"

Re claim 7, Applicant recites in part on line 4, "the physical network", which lacks antecedent basis.

Re claim 14, Applicant recites in part on line 5, "between the call request terminal and the call requested terminal amongst the plurality of terminals", where "the call request terminal" and "the call requested terminal" lack antecedent basis.

Re claim 16, Applicant recites in part on line 1, "wherein one or more switching hubs are connected to the tree structure," where "the tree structure" lacks antecedent basis.

Re claim 21, Applicant recites on line 1, "wherein the three bits of TCI that represent priority" which lacks antecedent basis. Also, Examiner suggests spelling out what "TCI" is to further clarify the claim.

Re claim 24, Applicant recites on line 2, "comprising means for configuring the threshold value" and "of the input frame rate of ports", where these limitations lack antecedent basis.

Re claim 25, Applicant recites on line 1, "wherein, amongst the switching hubs, hubs at the edge of the network comprise means which, upon receipt of a notification of source MAC addresses and destination MAC addresses for which the maximum transmission capacity is guaranteed from the network resource management means, activates the priority processing markings of frames with these MAC addresses, and, upon receipt of a notification of MAC addresses without guaranteed maximum transmission capacity from the network resource management means, removes the priority processing markings of the frames with these MAC addresses." First, to correct

antecedence, "hubs at the edge of the network", "the maximum transmission capacity" and “the priority processing markings” should be corrected. Further, "activates” should be corrected to “activate” and “removes” should be corrected to “remove”.

Re claim 27, Applicant recites on line 2, "VLAN identifiers represented by TCI, wherein:". Examiner suggests spelling out what “TCI” is to further clarify the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 1-13 are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd.* v. *Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-13,14-25, and 26-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re claim 1, Applicant recites a transmission capacity allocation method "for configuring a path with guaranteed transmission capacity...and configuring a single path between learned terminals, wherein:" followed by functional language describing functions of specific structures in a system, which language substantially follows the format of means plus function limitations. Thus, the method claim merely provides for the use of the transmission capacity allocation method, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced. Further, by using the transition word "wherein", it is unclear if the scope of the claim is open-ended or close-ended. It is suggested that to overcome the 35 USC 112 rejection, the use of proper method transitional terms is used, i.e. "comprising" or "consisting" "(the steps) of". Also, to make the claims definite, the method steps should be clearly recited, for example, "managing connections", "transmitting a call request", and "making an assessment". The dependent claims 2-13 do not remedy the deficiencies of Claim 1 and are thus rejected as well.

Re claim 1 (and similarly Claims 14 and 26), Applicant recites the limitation starting on line 32 of claim 1 (line 34 of Claim 14 & line 26 of Claim 26), "upon receipt of the clear request, the network resource management means releases capacity in case

transmission capacity corresponding to the clear request has been assured." It is unclear whether the use of "in case" is intended for use as a hypothetical precursor, as in "She closed the window in case it rained", or used to mean as a result, as in "She ordered a salad in the case of she was a vegetarian".

Re claims 6 and 27, Applicant recites on line 2 of claim 6 (and similarly on line 1 of claim 27), "means manages the usage status of VLAN identifiers represented by TCI". It is unclear as to whether TCI represents the means for managing, the usage status, or the VLAN identifiers.

Re claim 7, Applicant recites the limitation starting on line 1, "wherein transmission capacity is allocated in advance even to currently unused communication paths that may be switched to in the future based on the spanning tree protocol,". It is unclear as to the relationship between "the spanning tree protocol" and what is based on it. For example, it is unclear if the allocation is based on the spanning tree protocol, or the paths are based on the spanning tree protocol.

Re claim 12, Applicant recites the limitation starting on line 3 of the claim, "as well as notification of the network resource management means by the switching hubs". It is unclear as to what constitutes the notification the switching hubs are performing and how it relates to the network resource management means.

Re claim 16, Applicant recites on line 1, "wherein one or more switching hubs are connected to the tree structure, with the network resource management means located in the vicinity of the root (root) of the tree structure." The term "vicinity" in claim 16 is a relative term which renders the claim indefinite. The term "vicinity" is not defined by the

claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Further, it is unclear as to what the root in parentheses is in line 3, "root (root) of the tree structure".

Re claim 17, Applicant recites in part on line 6, "the terminals compliant with frames having guaranteed maximum transmission capacity can have means for appending". Since 'can' renders the limitation as a potentially optional requirement in the network, it is unclear if the Applicant is claiming the terminals having the means for appending or not. See also MPEP 2106.II.C and MPEP 2111.04.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 1,5,9,11,14,15,26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ely et al (7,606,909) in view of Gonda (2003/0067928).

Re claim 1, Ely et al discloses a transmission capacity allocation method for configuring a path with guaranteed transmission capacity (transmission bandwidth required based on codec [col. 11, lines 55-67]) between a call request terminal (for example, customer 150 [col. 3, lines 10-19]) and a call requested terminal (for example, agent [col. 4, lines 10-20]) via one or more switching hubs (for example, media handler routes media [col. 3, lines 32-40]), wherein:

network resource management means (conference controller [col. 6, lines 42-60]) managing connections between the terminals and the switching hubs, as well as between the switching hubs, and transmission capacity of transmission links associated with the connections, is provided on a network (bandwidth manager manages bandwidth for all connections in all parts of the network [col. 8, lines 5-17]);

the call request terminal transmits a call request containing information on the transmission capacity (device capability info, including video, audio, and data codec support [col. 5, lines 64-67]) whose allocation is requested in order to perform communication, along with its own terminal address and the address of the call requested terminal (information includes IP address information [col. 4, lines 53-60] & type of media service, media endpoints, and media sources [col. 7, lines 30-36]);

the network resource management means, in response to the call request from the call request terminal (call is initiated by a customer [col. 4, lines 50-60]), makes an assessment as to whether transmission capacity to be used can be assured along the path traversing switching hubs between the call request terminal and the call requested terminal (col. 11, lines 40-67]) and transmits the call request to the call requested terminal if it can be assured (inherently the call request would reach the call requested terminal (See Figure 4, labels 140 and 160), or transmits an incoming call rejection to the call request terminal if it cannot be assured (bandwidth manager may reject the call [col. 11, lines 57-62]);

the call requested terminal transmits a receive acknowledgement to the call request terminal through the network resource management means if it is itself communication-enabled (for example, agent manager responds with the name and IP address of an available agent in response to an call setup event to an agent [col. 11, lines 20-27]);

the network resource management means, forwarding a receive acknowledgement from the call requested terminal to the corresponding call request terminal (handles call setup including negotiation between customer and agent [col. 7, lines 11-45] [col. 10, lines 40-44] [col. 4, lines 30-37]);

the call request terminal, upon receipt of the receive acknowledgement from the call requested terminal, recognizes that communication with guaranteed transmission capacity has been established and initiates transmission of data frames to the call requested terminal (once a call is setup, data flows between the participants [col. 4, lines 43-50]);

the call request terminal or the call requested terminal, upon completion of communication, transmits a clear request to a peer terminal via the network resource management means (receives a call clear request [col. 7, lines 20-27]); and,

upon receipt of the clear request (event is a call clear event [col. 14, lines 27-32]), the network resource management means releases transmission capacity in case transmission capacity corresponding to the clear request has been assured (bandwidth associated with the cleared call are released by the bandwidth manager [col. 15, lines 1-14]).

but does not explicitly disclose

the call requested terminal transmits a call rejection if it is itself communication-disabled;

the network resource management means, along with forwarding a call rejection from the call requested terminal to the corresponding call request terminal, releases transmission capacity assured for the call request associated with the call rejection when the call rejection is received from the call requested terminal; and

switching hubs learning respective MAC (Media Access Control) addresses of terminals in communication with each other and configuring a single path between learned terminals.

However, Ely et al teaches of a call rejection based on the network resource management means not having enough bandwidth for a call ([col. 13, lines 55-60])

and the network resource management means releases transmission capacity assured for the call request associated with a “done” ([col. 14, lines 25-37]). It would

have been obvious for one of ordinary skill in the art at the time of the invention to use the teachings of Ely et al to have the call requested terminal transmit a call rejection in order to account for the call requested terminal not being able to support a call. The modified Ely et al does not explicitly disclose switching hubs learning respective MAC (Media Access Control) addresses of terminals in communication with each other and configuring a single path between learned terminals.

However, Gonda teaches of one or more switching hubs (nodes along the path) that learn respective MAC (Media Access Control) addresses of the terminals (source and destination MAC addresses [0038][0040]) in communication with each other and configure a single path between learned terminals (circuit/connection/flow using STP [0038][0042]). It would have been obvious for one of ordinary skill in the art at the time of the invention to include MAC address learning as taught by Gonda in the modified method of Ely et al in order to manage flows in a well known network layer (Gonda [0002][0011]).

Re claim 5, the modified Ely et al modified by Gonda teaches the transmission capacity allocation method according to claim 1, and further discloses: while communication is in progress, the call requested terminal transmits the data of at least one frame to the call request terminal (once a call is setup, data flows between the participants [col. 4, lines 43-50]), but does not explicitly disclose wherein: at intervals within the aging time of the MAC address learning function of the switching hubs on the network, and the switching hubs along the path between the call request terminal and the call requested terminal continue learning the MAC address of the above-mentioned

call requested terminal using the data of at least one frame. However, Gonda teaches at intervals within the aging time of the MAC address learning function of the switching hubs on the network (aging is the process by which AT entries can be removed from the table at regular timeouts so that the stale entries can be removed and the AT entry can be reused [0040]), and the switching hubs (switch/node) along the path between the call request terminal (SMA) and the call requested terminal (DMA) continue learning the MAC address of the above-mentioned call requested terminal using the data of at least one frame (for example, in a unidirectional circuit, only forward path entries are entered, and in bidirectional circuits, both forward and reverse path entries are added [0070] with respect to MAC addresses [0067]-[0069]). It would have been obvious for one of ordinary skill in the art at the time of the invention to include aging and the switching hubs leaning the MAC addresses of the call requested terminal as taught by Gonda in the modified Ely et al in order to save space in a MAC address table and to properly route a layer 2 stream from source to destination without flooding every packet (Gonda [0041]).

Re claim 9, note that Ely et al discloses the transmission capacity allocation method according wherein, when the call request terminal issues a request for multicast communication (for example, a multi-point data service [col. 10, lines 7-15]), transmission capacity is assured along the transmission links of each path used for the requested multicast communication (bandwidth limits for any IP address or masked portion thereof, including individual media handlers and networks or sub-portions thereof [col. 8, lines 1-20]).

Re claim 11, Ely et al discloses the transmission capacity allocation method according, wherein, in order to transmit information regarding correspondents, transmission capacity, assurability of capacity, acceptance/rejection of incoming calls, and release of capacity, the network resource management means and the terminals use SIP (Session Initiation Protocol) ([col. 7, lines 15-25]).

Re claim 14, Ely et al discloses a communications network comprising a plurality of terminals (for example, customers and agents (Figure 1), and network resource management means (conference controller [col. 6, lines 42-60]) configuring a path traversing any one or more of the one or more switching hubs (for example, media handler routes media [col. 3, lines 32-40]) between the call request terminal and the call requested terminal amongst the plurality of terminals, wherein:

each one of the plurality of terminals comprises:

means for transmitting a call request (call is initiated by a customer [col. 4, lines 50-60]) containing information on the transmission capacity (device capability info, including video, audio, and data codec support [col. 5, lines 64-67]) whose allocation is requested in order to perform communication, along with its own terminal address and the address of the call requested terminal (information includes IP address information [col. 4, lines 53-60] & type of media service, media endpoints, and media sources [col. 7, lines 30-36]), when the terminal itself operates as a call request terminal (for example, customer 150 [col. 3, lines 10-19]);

means for transmitting a receive acknowledgement when it is itself communication-enabled to the call request terminal associated with a call request via the network

resource management means when a call request is received (for example, agent manager responds with the name and IP address of an available agent in response to an call setup event to an agent [col. 11, lines 20-27]) and the terminal itself operates as a call requested terminal (for example, agent [col. 4, lines 10-20]);

means for recognizing that communication with guaranteed transmission capacity has been established (transmission bandwidth required based on codec [col. 11, lines 55-67]) and initiating transmission of data frames to the call requested terminal upon receipt of a receive acknowledgement from the call requested terminal when operating as a call request terminal (once a call is setup, data flows between the participants [col. 4, lines 43-50]); and

means for transmitting a clear request to a peer terminal via the network resource management means upon completion of communication (receives a call clear request [col. 7, lines 20-27]); and

the network resource management means comprises:

means for storing the connection between the terminals and the switching hubs, as well as between the switching hubs, and the transmission capacity of the transmission links associated with this connection (bandwidth manager manages bandwidth for all connections in all parts of the network [col. 8, lines 5-17]);

means for (for example, call manager and event handler (Figure 4)) consulting the storage means in response to a call request from a call request terminal and making an assessment as to whether the transmission capacity to be used can be assured along a

path traversing switching hubs between a call request terminal and a call requested terminal ([col. 8, lines 10-25]);

means for increasing the transmission capacity to be used in the storage means by an amount corresponding to said assurance (col. 11, lines 40-67]) and transmitting a call request from said call request terminal to said call requested terminal if, in accordance with the assessment results of the assessment means, it can be assured (inherently the call request would reach the call requested terminal (See Figure 4, labels 140 and 160), or transmitting an incoming call rejection to said call request terminal if it cannot be assured (bandwidth manager may reject the call [col. 11, lines 57-62]);

means for forwarding a receive acknowledgement from the call requested terminal to the corresponding call request terminal (handles call setup including negotiation between customer and agent [col. 7, lines 11-45] [col. 10, lines 40-44] [col. 4, lines 30-37]); and

means for releasing transmission capacity and withdrawing it from the storage means when a clear request is received from the other terminal (for example, agent hangs up IP phone the call clear is received over the Q.931 interface [col. 11, lines 13-18]) participating in communication in case transmission capacity corresponding to the clear request has been assured (bandwidth associated with the cleared call are released by the bandwidth manager [col. 15, lines 1-14]);

but does not explicitly disclose:

transmitting a call rejection when it is itself communication-disabled;

the network resource management means forwarding a call rejection from the call requested terminal to the corresponding call request terminal,

means for releasing transmission capacity assured for the call request associated with the call rejection and withdrawing it from the storage means when a call rejection is received from the call requested terminal; and

one or more switching hubs that learn respective MAC (Media Access Control) addresses of the terminals in communication with each other and configure a single path between learned terminals.

However, Ely et al teaches of a call rejection based on the network resource management means not having enough bandwidth for a call ([col. 13, lines 55-60])

and the network resource management means releases transmission capacity assured for the call request associated with a "done" ([col. 14, lines 25-37]). It would have been obvious for one of ordinary skill in the art at the time of the invention to use the teachings of Ely et al to have the call requested terminal transmit a call rejection in order to account for the call requested terminal not being able to support a call. The modified Ely et al does not explicitly disclose switching hubs learning respective MAC (Media Access Control) addresses of terminals in communication with each other and configuring a single path between learned terminals.

However, Gonda teaches of one or more switching hubs (nodes along the path) that learn respective MAC (Media Access Control) addresses of the terminals (source and destination MAC addresses [0038][0040]) in communication with each other and configure a single path between learned terminals (circuit/connection/flow using STP

[0038][0042]). It would have been obvious for one of ordinary skill in the art at the time of the invention to include MAC address learning as taught by Gonda in the modified method of Ely et al in order to manage flows in a well known network layer (Gonda [0002][0011]).

Re claim 15, note that Ely et al discloses the communications network wherein the network resource management means (for example, conference controller [col. 6, lines 43-59]) is provided in any one of the one or more switching hubs (for example, conference controller has a LAN module to connect to the packet based network [col. 6, lines 43-59] and in Figure 1, forwards messages between a source and destination).

Re claim 26, Ely et al discloses a network resource management device (conference controller [col. 6, lines 42-60]) for configuring a path traversing one or more transmission links and one or more switching hubs (for example, media handler routes media [col. 3, lines 32-40]) between terminals (for example, customers and agents (Figure 1) on a network, wherein the terminals are terminals comprising means for reserving transmission capacity to be used upon a call request, with the network resource management device comprising:

means for storing connections between the terminals and the switching hubs, as well as between the switching hubs, and the transmission capacity of the transmission links associated with the connections (bandwidth manager manages bandwidth for all connections in all parts of the network [col. 8, lines 5-17]);

means for (for example, call manager and event handler (Figure 4) consulting the storage means in response to the call request from the call request terminal and making

an assessment as to whether the transmission capacity to be used can be assured along the path traversing switching hubs between the call request terminal and the call requested terminal ([col. 8, lines 10-25]);

means for increasing the transmission capacity to be used in the storage means by an amount corresponding to said assurance (col. 11, lines 40-67]) and transmitting a call request from said call request terminal to said call requested terminal if, in accordance with the assessment results of the assessment means, it can be assured (inherently the call request would reach the call requested terminal (See Figure 4, labels 140 and 160), or transmitting an incoming call rejection to said call request terminal if it cannot be assured (bandwidth manager may reject the call [col. 11, lines 57-62]);

means for forwarding a receive acknowledgement from the call requested terminal to the corresponding call request terminal (handles call setup including negotiation between customer and agent [col. 7, lines 11-45] [col. 10, lines 40-44] [col. 4, lines 30-37]); and

means for releasing transmission capacity and withdrawing it from the storage means when a clear request is received from the other terminal (for example, agent hangs up IP phone the call clear is received over the Q.931 interface [col. 11, lines 13-18]) participating in communication in case transmission capacity corresponding to the clear request has been assured (bandwidth associated with the cleared call are released by the bandwidth manager [col. 15, lines 1-14]);

but does not explicitly disclose

means for forwarding a call rejection from the call requested terminal to the corresponding call request terminal, and

means for releasing transmission capacity assured for the call request associated with the call rejection and withdrawing it from the storage means when a call rejection is received from the call requested terminal; and

the switching hubs are switching hubs with an MAC address learning function that learn the respective MAC (Media Access Control) addresses of terminals in communication with each other and configure a single path between the learned terminals.

However, Ely et al teaches of a call rejection based on the network resource management means not having enough bandwidth for a call ([col. 13, lines 55-60])

and the network resource management means releases transmission capacity assured for the call request associated with a "done" ([col. 14, lines 25-37]). It would have been obvious for one of ordinary skill in the art at the time of the invention to use the teachings of Ely et al to have the call requested terminal transmit a call rejection in order to account for the call requested terminal not being able to support a call. The modified Ely et al does not explicitly disclose switching hubs learning respective MAC (Media Access Control) addresses of terminals in communication with each other and configuring a single path between learned terminals.

However, Gonda teaches of one or more switching hubs (nodes along the path) that learn respective MAC (Media Access Control) addresses of the terminals (source and destination MAC addresses [0038][0040]) in communication with each other and

configure a single path between learned terminals (circuit/connection/flow using STP [0038][0042]). It would have been obvious for one of ordinary skill in the art at the time of the invention to include MAC address learning as taught by Gonda in the modified method of Ely et al in order to manage flows in a well known network layer (Gonda [0002][0011]).

11. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over the modified Ely et al in view of Gonda as applied to claim 1 above, and further in view of Bradd (2003/0123388).

Re claim 2, the modified Ely et al modified by Gonda teaches the transmission capacity allocation method according to claim 1, but does not explicitly disclose wherein: during communication with the call requested terminal, if necessary, the call request terminal requests changes in the transmission capacity of the communication path, and, in response to this request, the network resource management means changes the transmission capacity of the communication path to the extent that the maximum assurable capacity is not exceeded. However, Bradd teaches of during communication with the call requested terminal, if necessary, the call request terminal (post-answer between media endpoints [0033]) requests changes in the transmission capacity of the communication path (using SDP changes to change the codec to be used that requires more bandwidth [0033]) , and, in response to this request, the network resource management means (call server) changes the transmission capacity of the communication path to the extent that the maximum assurable capacity is not

exceeded (if there is not enough bandwidth on a link then the call server arranges for the call to remain at the un-modified bandwidth [0033]). It would have been obvious for one of ordinary skill in the art at the time of the invention to include a change of transmission capacity request as taught by Bradd in the modified method of Ely et al in order to maximize the quality of a call taking place between media endpoints.

12. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over the modified Ely et al in view of Gonda as applied to claim 1 above, and further in view of Abaye (7,260,060).

Re claim 3, the modified Ely et al modified by Gonda teaches the transmission capacity allocation method according to claim 1, but does not explicitly disclose wherein: along with the receive acknowledgement, the call requested terminal requests allocation of transmission capacity in the direction of the call request terminal from the call requested terminal, and in response to this request, the network resource management means makes an assessment as to whether the transmission capacity can be assured and notifies said call requested terminal of the results. However, Abaye et al teaches along with the receive acknowledgement (for example, REPLY_RESOURCE_AVAILABILITY [col. 12, lines 5-15]), the call requested terminal requests allocation of transmission capacity in the direction of the call request terminal from the call requested terminal (codecs, packet sizes, and resource elements supported by the destination terminal [col. 12, lines 9-15]), and in response to this request, the network resource management means makes an assessment as to

whether the transmission capacity can be assured (connection manager updates elements in candidate list for connection [col. 12, lines 12-20]) and notifies said call requested terminal of the results (for example, if the call cannot be allowed, the connection manager sends a message to terminate the call setup [col. 12, lines 18-25]). It would have been obvious for one of ordinary skill in the art at the time of the invention to include a transmission capacity request for the call requested terminal as taught by Abaye et al in the modified method of Ely et al in order to support the transmission capacity of all devices in a connection.

Re claim 4, the modified Ely et al modified by Gonda teaches the transmission capacity allocation method according to claim 1, and further discloses wherein: the call request terminal is a terminal carrying out stream data delivery service ([col. 4, lines 40-50]), but does not explicitly disclose the call requested terminal, prior to receiving the stream data delivery service, issues a notification of completion of preparations for receiving the delivery service using a broadcast frame or a frame destined for the call request terminal; and in response to the notification, the switching hubs along the path between the call request terminal and the call requested terminal finish learning the MAC address of the call requested terminal.

However, Abaye teaches of the call requested terminal, prior to receiving the stream data delivery service, issues a notification of completion of preparations for receiving the delivery service using a frame destined for the call request terminal (for example, in Figure 5, the RESV message confirms the flow and the network path [col. 13, lines 47-60]). It would have been obvious for one of ordinary skill in the art at the time of the

invention to include a notification to the call request terminal as taught by Abaye in order to set up a connection between two end parties. Abaye does not explicitly disclose, in response to the notification, the switching hubs along the path between the call request terminal and the call requested terminal finish learning the MAC address of the call requested terminal.

However, Gonda teaches of the switching hubs along the path between the call request terminal and the call requested terminal finish learning the MAC address of the call requested terminal (for example, traveling the reverse direction to get to destination station S [0067] in a unidirectional circuit [0050][0070]). It would have been obvious for one of ordinary skill in the art at the time of the invention to include MAC address learning as taught by Gonda in the modified method of Ely et al in order to manage flows in a well known network layer (Gonda [0002][0011]).

13. Claims 6 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over the modified Ely et al in view of Gonda as applied to claims 1 and 26 above, and further in view of Lee and Zabihi et al (2004/0042454).

Re claim 6, the modified Ely et al modified by Gonda teaches the transmission capacity allocation method according to claim 1, and as pointed out in the rejection of Claim 1 above teaches wherein: a receive acknowledgement is forwarded from the call requested terminal to the call request terminal; transmitting a frame to the call requested terminal, the switching hubs learn the source MAC address when carrying out MAC address learning for the frame; the call request terminal transmits one or more frames

within the time-out period; receipt of a frame from the call request terminal, and, a frame is transmitted to the call request terminal; when the call request terminal or the call requested terminal cuts off communication with a peer terminal, it transmits a clear request to the network resource management means (See Rejection for Claim 1).

but does not explicitly disclose:

setting a time-out period in the input ports that received the received frame and the output ports selected during forwarding; and

the network resource management means manages the usage status of VLAN (Virtual Local Area Network) identifiers represented by TCI (Tag Control Information), attaching a VLAN tag containing TCI corresponding to an unused VLAN identifier to the receive acknowledgement, stores the VLAN identifier as being in use; reading the VLAN identifier from the VLAN tag attached; attaches a VLAN tag thereto that corresponds to the VLAN identifier that has been read; the switching hubs learn the VLAN identifier and set the VLAN identifier with a time-out period in the input ports that received the received frame and the output ports selected during forwarding; and stops attaching VLAN tags to frames upon transmission of the clear request; and, upon receipt of the clear request with a VLAN tag attached thereto, the network resource management means stores the VLAN identifier as being unused.

However, Zabihi et al teaches of the network resource management means manages the usage status of VLAN (Virtual Local Area Network) identifiers, attaching a VLAN tag containing TCI corresponding to an unused VLAN identifier (chooses a unused VLAN identifiers [0061]) to the receive acknowledgement (for example, in a

connection across a backbone network [0051]-[0052]), stores the VLAN identifier as being in use (subsequently blocked for reuse and is stored in a roster of in-use VLAN identifiers centrally [0061]); reading the VLAN identifier from the VLAN tag attached (VLAN identifier is used to route packets [0021]); attaches a VLAN tag thereto that corresponds to the VLAN identifier that has been read (adds a VLAN identifier to the packet header [0021]) ; the switching hubs learn the VLAN identifier (for example, VLAN data traffic is switched to ports based on VLAN identifiers [0052] and provisioned on the links [0055]); and stops attaching VLAN tags to frames upon transmission of the clear request (for example, when the VLAN identifier is no longer needed [0021]); and, upon receipt of the clear request with a VLAN tag attached thereto, the network resource management means stores the VLAN identifier as being unused (for example, surrenders or is an unused VLAN identifier [0061]). It would have been obvious for one of ordinary skill in the art at the time of the invention to use VLAN identifiers as taught by Zabihi et al in the modified device of Ely et al in order to extend a LAN beyond a physical area (Zabihi et al [0007]). Zabihi et al does not explicitly disclose setting a time-out period in the input ports that received the received frame and the output ports selected during forwarding and a VLAN tag containing TCI.

However, Lee teaches of a VLAN tag containing TCI (See Figure 1 and 3-bit 802.1p identifier field is used to determine the priority level [0014]). It would have been obvious for one of ordinary skill in the art at the time of the invention to include TCI information indicating the priority as taught by Lee et al in the modified device of Ely et al in order to guarantee a high level of QoS for multimedia streams (Lee et al [0006]-[0007]). Lee

does not explicitly disclose setting a time-out period in the input ports that received the received frame and the output ports selected during forwarding.

However, Gonda teaches setting a time-out period in the input ports that received the received frame and the output ports selected during forwarding (aging is the process by which AT entries can be removed from the table at regular timeouts so that the stale entries can be removed and the AT entry can be reused [0040]). It would have been obvious for one of ordinary skill in the art at the time of the invention to include a time-out period as taught by Gonda in the modified Ely et al in order to save space in a MAC address table.

Re claim 27, the modified Ely et al in view of Gonda teaches the network resource management device according to claim 26, but does not explicitly disclose means for managing the usage status of VLAN identifiers represented by TCI, wherein: the managing means includes: means for attaching a VLAN tag containing TCI corresponding to an unused VLAN identifier to a receive acknowledgement when a receive acknowledgement is forwarded from the call requested terminal to the call request terminal; means for storing the VLAN identifier corresponding to the attached VLAN tag as being in use; and means which, upon receipt of a clear request with the VLAN tag attached thereto, stores the VLAN identifier as being unused.

However, Zabihi et al teaches of means for managing the usage status of VLAN identifiers, wherein: the managing means includes: means for attaching a VLAN tag corresponding to an unused VLAN identifier (chooses a unused VLAN identifiers [0061]) to a receive acknowledgement when a receive acknowledgement is forwarded from the

call requested terminal to the call request terminal (for example, in a connection across a backbone network [0051]-[0052]) ;

means for storing the VLAN identifier corresponding to the attached VLAN tag as being in use (subsequently blocked for reuse and is stored in a roster of in-use VLAN identifiers centrally [0061]); and means which, upon receipt of a clear request with the VLAN tag attached thereto (for example, when the VLAN identifier is no longer needed [0021]), stores the VLAN identifier as being unused (for example, surrenders or is an unused VLAN identifier [0061]). It would have been obvious for one of ordinary skill in the art at the time of the invention to use VLAN identifiers as taught by Zabihi et al in the modified device of Ely et al in order to extend a LAN beyond a physical area (Zabihi et al [0007]). Zabihi et al does not explicitly disclose a VLAN tag containing TCI.

However, Lee teaches of a VLAN tag containing TCI (See Figure 1 and 3-bit 802.1p identifier field is used to determine the priority level [0014]). It would have been obvious for one of ordinary skill in the art at the time of the invention to include TCI information indicating the priority as taught by Lee et al in the modified device of Ely et al in order to guarantee a high level of QoS for multimedia streams (Lee et al [0006]-[0007]).

14. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over the modified Ely et al in view of Gonda as applied to claim 1 above, and further in view of Li et al (2004/0165528) & Higashiyama (2002/0196975).

Re claim 7, the modified Ely et al modified by Gonda teaches the transmission capacity allocation method according to claim 1, but does not explicitly disclose wherein

transmission capacity is allocated in advance even to currently unused communication paths that may be switched to in the future based on the spanning tree protocol, in accordance with which networks are rebuilt so as not to form loops logically even if the physical network does form a loop. However, Li et al teaches of transmission capacity allocated in advance even to currently unused communication paths that may be switched to in the future (advance reservation for AF or EF VPNs [0047]-[0048]). It would have been obvious for one of ordinary skill in the art at the time of the invention to include advance allocation of transmission capacity as taught by Li et al in the modified method of Ely et al in order to guarantee the transmission capacity of a higher priority stream (Li et al [0047]). The modified Ely et al modified by Gonda & Li et al does not explicitly disclose the paths based on the spanning tree protocol, in accordance with which networks are rebuilt so as not to form loops logically even if the physical network does form a loop. However, Higashiyama teaches in a call environment setting ([0160]) of using the spanning tree protocol ([0148]), in accordance with which networks are rebuilt so as not to form loops logically even if the physical network does form a loop (relay devices are connected to each other and the network includes a redundant channel [0146]-[0147]). It would have been obvious for one of ordinary skill in the art at the time of the invention to include a spanning tree protocol as taught by Higashiyama in the modified method of Ely et al in order to avoid a redundant route (Higashiyama [0006]).

Re claim 8, the modified Ely et al modified by Gonda, Li et al & Higashiyama teaches the transmission capacity allocation method according to claim 7, but does not

explicitly disclose wherein, when the currently used communication path overlaps with a currently unused communication path that may be switched to in the future, allocation of transmission capacity to said currently unused communication path is prohibited. However, Gonda teaches wherein there is only one active path between from a root node to each of the other nodes, and that all other links between the nodes are disabled and cannot be used ([0042], and therefore, there cannot be paths that overlap. It would have been obvious for one of ordinary skill in the art at the time of the invention to include non-overlapping paths as taught by Gonda in the modified method of Ely et al in order to avoid loops in a network.

15. Claims 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over the modified Ely et al in view of Gonda as applied to claim 1 above, and further in view of Kitada (2003/0037163).

Re claim 10, the modified Ely et al modified by Gonda teaches the transmission capacity allocation method according to claim 1, but does not explicitly disclose wherein the network resource management means uses IGMP (Internet Group Management Protocol), GMRP (GARP Multicast Registration Protocol), or GVRP (GARP VLAN Registration Protocol) to perform address management during multicast delivery of stream data. However, Kitada et al teaches of a network resource management means (for example, in a subscriber edge switch [0217]-[0218]) using GVRP ([0228]) to perform address management during multicast delivery of stream data (ports can accept a frame having a multicast address [0228] and broadcasting to users [0229]-

[0230]). It would have been obvious for one of ordinary skill in the art at the time of the invention to use a protocol taught by Kitada et al in the modified method of Ely et al since it is well known in the art that applying a well known standard, or protocol, to a system provides the system with significantly improved industrial applicability.

Re claim 12, the modified Ely et al modified by Gonda teaches the transmission capacity allocation method according to claim 1, but does not explicitly disclose wherein connection of the switching hubs and detection of the transmission capacity, configuration of the switching hubs via access by the network resource management means, as well as notification of the network resource management means by the switching hubs, are performed by the network resource management means and the switching hubs based on SNMP (Simple Network Management Protocol), RMON (Remote Network Monitoring), or RMON2 (Remote Network Monitoring MIB Version2). However, Kitada et al teaches of connection of the switching hubs (when a new service provider is added to the system [0370]) and detection of the transmission capacity (for example, access permission for transmission [0381], configuration of the switching hubs via access by the network resource management means (for example, registering a service provider in a proxy Radius server [0370]), as well as notification of the network resource management means by the switching hubs (for example, sending management frames to a session management server [0385]-[0386]), are performed by the network resource management means and the switching hubs based on SNMP ([0370][0385]). It would have been obvious for one of ordinary skill in the art at the time of the invention to communicate between switching hubs and a management means

using a management protocol as taught by Kitada et al in the modified method of Ely et al in order to control the setup and structure of a network using well known protocols.

16. Claims 13,17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the modified Ely et al in view of Gonda as applied to claims 1 and 14 above, and further in view of Li et al.

Re claim 13, the modified Ely et al modified by Gonda teaches the transmission capacity allocation method according to claim 1, but does not explicitly disclose wherein: the co-existence of frames with guaranteed maximum transmission capacity and non-guaranteed Best Effort type frames is permitted, with the call request terminal transmitting frames with guaranteed maximum transmission capacity by appending priority markings thereto, such that the call request terminal, the network resource management means, and the call requested terminal can process transmission capacity allocation only for frames, to which the priority markings are appended. However, Li et al teaches of the co-existence of frames with guaranteed maximum transmission capacity (for example, EF class signifies premium service and AF4 signifies highest priority [0024]) and non-guaranteed Best Effort type frames (for example, best effort class [0024]) is permitted, with the call request terminal transmitting frames with guaranteed maximum transmission capacity by appending priority markings thereto (for example, marked by bits separating classes [0038]), such that the call request terminal, the network resource management means, and the call requested terminal can process transmission capacity allocation only for frames, to which the priority markings are

appended (best-effort traffic class, no admission control is necessary [0059][0067]). It would have been obvious for one of ordinary skill in the art at the time of the invention to include priority classes as taught by Li et al in order to guarantee quality of service to the time-sensitive traffic.

Re claim 17, the modified Ely et al modified by Gonda teaches the communications network according to claim 14, but does not explicitly disclose: the plurality of terminals are terminals compliant with frames having guaranteed maximum transmission capacity and, on the network, Best-Effort type terminals compliant only with frames having no guaranteed maximum transmission capacity may co-exist therewith and the terminals compliant with frames having guaranteed maximum transmission capacity can have means for appending priority markings to frames with guaranteed transmission capacity.

However, Li et al teaches of a plurality of terminals are terminals compliant with frames having guaranteed maximum transmission capacity (for example, EF class signifies premium service and AF4 signifies highest priority [0024]) and,

on the network, Best-Effort type terminals compliant only with frames having no guaranteed maximum transmission capacity may co-exist therewith (for example, best effort class [0024]) and

the terminals compliant with frames having guaranteed maximum transmission capacity can have means for ([0023]-[0024]) appending priority markings (for example, marked by bits separating classes [0038]) to frames with guaranteed transmission capacity. It would have been obvious for one of ordinary skill in the art at the time of

the invention to include priority classes as taught by Li et al in order to guarantee quality of service to the time-sensitive traffic.

Re claim 18, the modified Ely et al modified by Gonda & Li et al teaches the communications network according to claim 17, but does not explicitly disclose wherein: each of the switching hubs comprises means for sending input frames, if the input frames have priority markings, to transmission links in preference to input frames without priority markings. However, Li et al teaches of each of the switching hubs comprises means for sending input frames (for example, a per-hop forward behavior [0004]), if the input frames have priority markings, to transmission links in preference to input frames without priority markings (inherently priority markings are used to forward traffic over non-priority traffic [0004]). It would have been obvious for one of ordinary skill in the art at the time of the invention to include transmitting frames with priority markings over those without markings as taught by Li et al in order to guarantee quality of service to differentiated traffic.

Re claim 19, the modified Ely et al modified by Gonda & Li et al teaches the communications network according to claim 18, but does not explicitly disclose wherein: each of the switching hubs comprises means which, whenever input frames have priority markings and the destination MAC addresses have been learned, sends said input frames to transmission links in preference to input frames without priority markings.

However, Gonda teaches of learning destination MAC addresses ([0038]). It would have been obvious for one of ordinary skill in the art at the time of the invention to learn

destination MAC addresses as taught by Gonda in the modified network of Ely et al in order to establish a circuit/connection/flow between a source and destination (Gonda [0038]). Ely et al modified by Gonda does not explicitly teach wherein whenever input frames have priority markings, sending said input frames to transmission links in preference to input frames without priority markings.

However, Li et al teaches of each of the switching hubs comprises means for sending input frames (for example, a per-hop forward behavior [0004]) , if the input frames have priority markings, to transmission links in preference to input frames without priority markings (inherently priority markings are used to forward traffic over non-priority traffic [0004]). It would have been obvious for one of ordinary skill in the art at the time of the invention to include transmitting frames with priority markings over those without markings as taught by Li et al in order to guarantee quality of service to differentiated traffic.

Re claim 20, the modified Ely et al modified by Gonda & Li et al teaches the communications network according to claim 18, but does not explicitly disclose wherein each of the switching hubs comprises means for processing the MAC address learning of priority-marked frames in preference to frames without priority markings. However, Gonda teaches wherein each of the switching hubs comprises means for processing the MAC address learning of frames ([0038]) and uses DiffServ ([0035]) and QoS [0037]). It would have been obvious for one of ordinary skill in the art at the time of the invention to process priority marked frames in preference to frames without priority markings using

the teachings of Gonda in the modified network of Ely et al in order to forward frames with priority markings before those of non-priority frames.

17. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over the modified Ely et al in view of Gonda as applied to claim 14 above, and further in view of Basso et al (6,690,678).

Re claim 16, the modified Ely et al modified by Gonda teaches the communications network according to claim 14, but does not explicitly disclose wherein one or more switching hubs are connected to the tree structure, with the network resource management means located in the vicinity of the root (root) of the tree structure. However, Basso et al teaches of one or more switching hubs (for example, backbone node) are connected to the tree structure ([col. 15, lines 1-25]), with the network resource management means (for example, backbone bandwidth management server [col. 15, lines 55-67]) located in the vicinity of the root (root) of the tree structure ([col. 16, lines 1-5]). It would have been obvious for one of ordinary skill in the art at the time of the invention to include a network resource management means in the root of the tree structure as taught by Basso et al in the modified Ely et al in order to send information that has to go to every node very quickly and efficiently (Basso et al [col. 15, lines 10-15]).

18. Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over the modified Ely et al in view of Gonda & Li et al as applied to claim 17 above, and further in view of Lee (2003/0126286).

Re claim 21, the modified Ely et al modified by Gonda & Li et al teaches the communications network according to claim 17, but does not explicitly disclose wherein the three bits of TCI that represent priority are used for priority indication. However, Lee et al teaches of wherein the three bits of TCI that represent priority are used for priority indication (3-bit 802.1p identifier field is used to determine the priority level [0014]). It would have been obvious for one of ordinary skill in the art at the time of the invention to include TCI information indicating the priority as taught by Lee et al in the modified network of Ely et al in order to guarantee a high level of QoS for multimedia streams (Lee et al [0006]-[0007]).

Re claim 22, the modified Ely et al modified by Gonda, Li et al & Lee et al teaches the communications network according to claim 21, wherein means for attaching or removing TCI from non-TCI-compliant frames is provided in switching hubs at the edge of the network. However, Lee et al teaches of means for attaching or removing TCI ([0063]) from non-TCI-compliant frames (for example, Diffserv packets [0057]-[0059]) is provided in switching hubs at the edge of the network ([0056][0062][0065]). It would have been obvious for one of ordinary skill in the art at the time of the invention to include TCI information in non-TCI-compliant frames as taught by Lee et al in the modified network of Ely et al in order to multiple levels of QoS (Lee et al [0002][0064]-[0065]).

19. Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over the modified Ely et al in view of Gonda & Li et al as applied to claim 18 above, and further in view of Feuerstraeter (2003/0123393).

Re claim 23, the modified Ely et al modified by Gonda & Li et al teaches the communications network according to claim 18, but does not explicitly disclose wherein each one of the switching hubs comprises means for sending a PAUSE frame that halts transmission to the corresponding input transmission links when the buffer size of frames not subject to priority processing becomes equal to or more than a predetermined value Th_{max} and sending a PAUSE frame that disables the suspension of transmission to the corresponding transmission links when a predetermined value Th_{min} (Th_{max}>Th_{min}) is reached.

However, Feuerstraeter et al teaches of one of the switching hubs comprises means for ([0044]) sending a PAUSE frame (control message that pauses transmission) that halts transmission to the corresponding input transmission links when the buffer size of frames not subject to priority processing (indicated by a priority level in the control message [0033], where for example, a lowest priority [0041] and Figure 4) becomes equal to or more than a predetermined value Th_{max} (for example, low priority levels allocated a lower buffer threshold [0032]-[0033]) and sending a PAUSE frame that disables the suspension of transmission to the corresponding transmission links when a predetermined value Th_{min} (for example, an arbitrary value below the threshold 308 [0044]) (Th_{max}>Th_{min}) is reached (pauses until a subsequent control message is

received modifying/eliminating the hold for the particular priority level [0031]). It would have been obvious for one of ordinary skill in the art at the time of the invention to include a PAUSE frame to halt transmission of low priority frames as taught by Feuerstraeter et al in the modified network of Ely et al in order to prioritize higher priority traffic over lower priority traffic (Feuerstraeter et al [0032]).

Re claim 24, the modified Ely et al modified by Gonda & Li et al teaches the communications network according to claim 18, but does not explicitly disclose wherein each one of the switching hubs comprises means for configuring the threshold value of the input frame rate of ports connected to the terminals manually or via access by the network resource management means, as well as means for handling frames with priority markings and frame rates exceeding the threshold value as non-priority frames. However, Feuerstraeter et al teaches of each one of the switching hubs (flow control agent in each network interface [0026][0036]) comprises means for (for example, a machine-readable medium [0051]) configuring the threshold value of the input frame rate of ports connected to the terminals manually ([0050] and block 702 identifies the receive capacity of a network interface [0041]) or via access by the network resource management means, as well as means for handling frames with priority markings and frame rates exceeding the threshold value as non-priority frames (for example, when the frame-rate exceeds the threshold, frames with priority marking at or below a specified level are stopped, thus negating any priority [0023][0033]). It would have been obvious for one of ordinary skill in the art at the time of the invention to include a threshold value of the input frame rate of ports as taught by Feuerstraeter et al in the

modified network of Ely et al in order to prioritize higher priority traffic over lower priority traffic (Feuerstraeter et al [0032]).

Re claim 25, the modified Ely et al modified by Gonda & Li et al teaches the communications network according to claim 18, but does not explicitly disclose wherein, amongst the switching hubs, hubs at the edge of the network comprise means which, upon receipt of a notification of source MAC addresses and destination MAC addresses for which the maximum transmission capacity is guaranteed from the network resource management means, activates the priority processing markings of frames with these MAC addresses, and, upon receipt of a notification of MAC addresses without guaranteed maximum transmission capacity from the network resource management means, removes the priority processing markings of the frames with these MAC addresses.

However, Feuerstraeter et al teaches at hubs at the edge of the network comprise means which (flow control agent in each network interface [0026][0036]), upon receipt of a notification of source MAC addresses and destination MAC addresses ([0018][0028]) for which the maximum transmission capacity is guaranteed from the network resource management means, activates the priority processing markings of frames with these MAC addresses (generates a control message designating a priority level above which content can be received [0031]), and, upon receipt of a notification of MAC addresses without guaranteed maximum transmission capacity from the network resource management means, removes the priority processing markings of the frames with these MAC addresses (for example, when the frame-rate exceeds the threshold,

frames with priority marking at or below a specified level are stopped, thus negating any priority [0023][0033]). It would have been obvious for one of ordinary skill in the art at the time of the invention to include a notification of guaranteed flows versus non-guaranteed flows as taught by Feuerstraeter et al in the modified network of Ely et al in order to prioritize higher priority traffic over lower priority traffic (Feuerstraeter et al [0032]).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL FIALKOWSKI whose telephone number is (571)270-5425. The examiner can normally be reached on Monday - Friday 10:30am-7pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel Ryman can be reached on (571)272-3152. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. F./
Examiner, Art Unit 2466

/Daniel J. Ryman/
Supervisory Patent Examiner, Art Unit 2466